LECTURE:	MWF 12:50 - 1:40 p.m.; B112 Angell R 5:30 - 8:15 p.m.; L403 Lafayette
LABORATORY:	*Section L01:* M 5:10 p.m. - 9:10 p.m. in A141 Cook *Section L02:* T 1:00 p.m. - 5:00 p.m. in A141 Cook *Section L03:* M 5:30 p.m. – 9:30 p.m. in A142 Cook
INSTRUCTOR:	Giuseppe Petrucci A218 Cook - Office 656-0957 Giuseppe.Petrucci@ uvm.edu *http://www.uvm.edu/~gpetrucc/*
TEACHING ASSISTANTS:	Shashank Jain Eva Rouanet A224 Cook (656-0901)

COURSE LEARNING GOALS:

What you will get out of this course:

1. ... general knowledge in chemistry and the ability to apply chemical and physical principles in the solution of qualitative and quantitative chemical problems.
2. ... understanding of the interplay of observational data, hypotheses, and hypothesis-driven experimentation through application of the scientific method.
3. … proficiency in chemical laboratory techniques and ability to apply these to practical and current problems in research.
4. … ability to read and critically evaluate the chemical and scientific literature.

Specifically, you will

1. … develop a theoretical foundation for variety of methods of analytical chemistry, including volumetric, gravimetric and electrochemical analysis, spectrophotometry, ion exchange and complexation
2. … experimentally apply a subset of the analytical methods discussed in lecture
3. … develop good practices of experimental observation, keeping a laboratory notebook and experimental technique
4. … build a foundation in statistical data evaluation, data interpretation and reporting of results

TEXT:	*Quantitative Chemical Analysis*, 8th Edition (REQUIRED) by Daniel C. Harris. On-line resources supplemental to the text can be found at http://bcs.whfreeman.com/qca/. A digital copy of the textbook may also be bought as a package (Sapling Homework + Textbook) from Sapling Learning at a significant savings. **Sapling Homework registration for course (see instructions here) This is *required* for the graded homework component of the course.**
LAB MANUAL:	*Chem121: The Laboratory Manual*, (REQUIRED) may be purchased in the Chemistry stockroom (A143).
LAB NOTEBOOK:	A BOUND lab notebook is REQUIRED and may be purchased in the bookstore. IT IS THE SAME NOTEBOOK AS USED FOR CHEM 31/35. It must be well organized and all data must be recorded directly into it in pen. You should also purchase an indelible marker or "Sharpie" (also available at the bookstore) for marking your name on weighing bottles and crucibles that will be dried in the lab ovens.
BREAKAGE CARD:	You must have one in order to check into the lab! Pay your $40.00 to the kind people in the first floor stockroom (A143 Cook) and they'll give you a card that entitles you to all of the rights and privileges of a genuine Chem 121 student. Bring the card to *every* lab session. If you're careful with your equipment throughout the term, you should get most of your $$ back at the end of the semester when you check out.

LAB SAFETY: It goes without saying that your safety in the lab is of prime importance. For many of you, this will be the first time that you will encounter a number of truly hazardous substances in the lab. Please heed all warnings and handle these substances as directed!

Cleaning Solution. We will use a mixture of a strong oxidant and concentrated H_2SO_4, called Nochromix, as a cleaning solution for burets, pipettes, and filtering crucibles. THIS MATERIAL WILL CAUSE SEVERE BURNS IF IT CONTACTS YOUR SKIN. It will also eat through your clothes (great stuff, huh?). If you happen to get *any* of it on your skin or clothes or in your eyes, wash the affected area *immediately* with copious amounts of water and call the lab instructor. Since a mere drop of this stuff can turn your favorite shirt, blouse, pants, or whatever into a rag, it is strongly recommended that you wear a lab coat (available at the bookstore or at the medical bookstore) or old clothes that your parents have threatened to incinerate.

Safety Goggles. Our pals at OSHA have made it a requirement that YOU MUST WEAR SAFETY GOGGLES (not just safety glasses) IN THE LAB AT ALL TIMES! They're available in the bookstore -- no excuses! Contact lenses are **NOT** allowed in the laboratory. If you wear prescription glasses, you must still wear goggles over them.

Pipetting. There will be *no* pipetting by mouth -- pipetting will be done *only* with a pipette bulb.

OFFICE HOURS: I will establish and announce office hours for the semester during the first week of classes. I will be available at other times as well (see me to make an appointment) and, of course, you are welcome to stop by my office at your convenience (but, if I am busy we will have to reschedule for another time). Also, I am *virtually* available via email for your questions; I check my email regularly every day (even on weekends), so you should be able to get an email reply to a question within 12 hours of your posting it to me (barring any unforeseen technical difficulties!).

GRADING: There will be three in-class exams, several short (30 min) quizzes and one comprehensive Final Exam (scheduled for Friday, Dec. 6, 7:30 am - 10:15 pm) in B112 Angell.

Your grade for the course will be determined as follows:

Laboratory:	200 points
Exam I:	150 points
Exam II:	150 points
Exam III:	150 points
Quizzes:	100 points
Homework:	100 points
Final Exam:	150 points
TOTAL:	1000 points

FINAL EXAM: You are not required to take the Final Exam. You will have the option to select the average of the three in-class exams as your Final Exam grade.

LECTURE: In order to learn the lecture material, one must work problems. To help you with this task, I will give periodic homework assignments through Sapling Learning. These assignments will be graded and make up 10% of your final grade.

LABORATORY: Practical quantitative analysis is a skill that is acquired only via meticulous practice in the laboratory. The purpose of this course is not only to acquaint you with specific methods of analysis, but also to instill in you good quantitative lab habits. You may never perform these specific analyses again, but the quantitative lab skills that you learn will help you regardless of the area of laboratory science you may end up in.

You *must* come to lab prepared to work. Each experiment has been allotted a sufficient number of periods for its completion -- you may not work on an experiment longer than the allotted number of periods. Before entering the lab, you should read and understand the experiment and outline the experimental procedure that you will follow. You cannot "wing" these labs -- if you're not prepared, you will not have enough time to finish in the allotted periods. We reserve the right to inspect your outlined experimental procedure before allowing you to begin the experiment.

LAB REPORTS: Lab reports should follow the format shown in the sample lab report (pdf). Please include a completed lab cover sheet (for the appropriate lab) with the lab report. All reports are due at the *beginning* of the lab period one week following the end of the assigned experiment. Late labs will be docked 2% of the total possible score for every day late (not including weekends). If it is obvious to us at first glance that you have made a serious error in your calculations, the lab report will be handed back to you without a grade and you will be given 24 hours to rectify the error(s).

LAB GRADING: Your lab grade will be based the accuracy of your results, your laboratory technique, pre-lab quizzes, your lab write up, and a subjective TA component (which includes, but is not limited to, preparedness, arriving to lab on time, pre-lab write-ups). Try to understand the *what* and *why* as well as the *how* aspects of the experiments. Take special care in drawing graphs and making calculations. If we need to redo calculations for you, you'll lose points. If incorrectly performed calculations result in inaccurate final answers, the lab will again be returned to you for corrections and your score for the lab reduced by 10%.